

PHENIX Safety Alarms

“Now are...our stern alarums changed to merry meetings”

---Shakespeare, *Richard III*

Just tell me:

- (1) What do I need to pay attention to?
- (2) When might immediate, emergency action be required?
- (3) What is the procedure in general?

Who needs to pay attention?

Answer: **Everyone.**

***All** shift crew members* should be able to deal appropriately with alarms. If you're on shift, you *have to be* prepared to handle alarms, no matter which position you're in.

Where do I watch/listen?

The primary safety alarm information in the control room comes from the panels PCR1--PCR4 on the south side of the PHENIX Control Room.

All serious alarms have an **audible alert**.



Levels of severity

Alarms from the main panel come in three groups:

- 1. Immediate, emergency action by the shift crew is required to prevent disaster; after that, call appropriate experts.
- 2. Call experts immediately; some action may be required from shift crew.
- 3. No action required, you only need to log the alarm and inform the next shift.

Different Alarm Sources

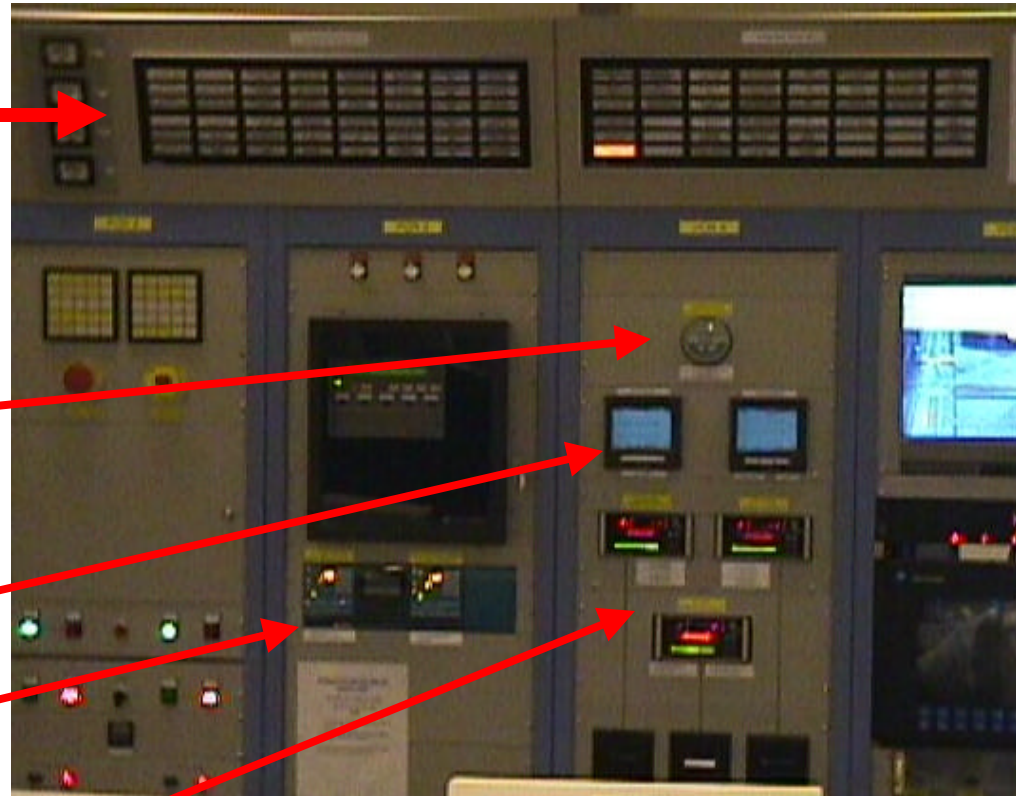
The window boxes:
your **main source** for
all serious conditions

Gas Mixing House
Flammable Gas Detectors

IR Heat and Humidity Monitors

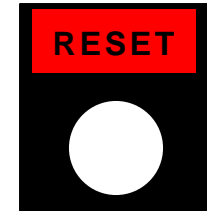
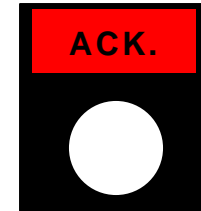
IR Smoke Detectors

IR Flammable Gas Detectors



Serious conditions in *any* of the detectors will light an alarm window on the window boxes.

Window Panel: General Procedure



- 1. Alarm sounds with a steady tone; one (or more) windows will flash
- 2. Hit **ACK** to stop the tone; the window(s) will stay lit as long as the alarm condition is true
- 3. Respond to the alarm condition
- 4. When the condition is cleared, the window(s) will flash again and an oscillating tone will sound.
- 5. Hit **RESET** to stop the tone; the window(s) will go dark, ie back to normal.

Alarm Number: A-1-7

Close window
Alarm name: West Carriage Main Power Breaker Trip
Description: This alarm indicates, that the 480V power breaker which feeds the west carriage electronics racks has tripped (turned off) via the electrical trip circuits of the safety monitor and control system (SMCS).
Equipment Location: The west carriage main power breaker is labelled "West Carriage Transformer" and is located in the 480V breaker panel "DP". Panel DP is in the rack room on the south wall.
Reason for Alarm: General: A large-scale problem which could potentially damage the entire experiment. Specifically: The west carriage main power breaker will trip and the alarm is indicated when any of the following conditions occur: <ul style="list-style-type: none"> • High level smoke detected on the west or east carriages including the TOF internal smoke detectors. (2 of 2 smoke detectors are in alarm) • High level smoke detected on the Beam-Beam North/Muon Tracker Station 1 North OR Beam-Beam South/Muon Tracker Station 1 South. • High level smoke or heat detected by the BNL fire dept. sensors on the IR ceiling. • High level flammable gas detected on the west or east carriages. • High level flammable gas detected near the MuID North or South, Low Capacity Vent Stack (LCVS), IR return air duct, or East and West carriage floor areas. • Loss of IR HVAC circulating air when the HVAC AND ventilation fans are off. • When the Phenix CR crash push button or any of the four IR crash push buttons are pushed. • If the breaker itself senses a short circuit exceeding the overcurrent limit setting. • The west carriage racks yellow ("Breaker Tripped") button on the control room "Main Power Breaker Control Panel" (rack PCR.1) is pushed.
Alarm Response: <ul style="list-style-type: none"> • Determine the cause of the trip via inspecting the instruments and other indicators on the main control board. Note all indicators with date and time and enter into the shift log. • Refer to the subsystem call list and contact the appropriate on-call person or persons.

Note that all the alarm boxes are indexed **Row-Column** (ie Y-X) from the **upper left**.

Window Box Explanations

You will find specific response instructions, as well as descriptions and details, for all the different alarms under the **Run-3 Web page** ("Safety Alarms") or in the **Alarm Response binder** (the information is the same in both).

“Who ‘ ya gonna call?”

After *most* alarms you will need to call one (or more) of four groups of people:

- Subsystem experts on call: see Run-3 Page
- Safety System experts:
 - Paul Giannotti, Frank Toldo, John Haggerty
- Gas System experts:
 - Carter Biggs, Leigh Hawkins, Rob Pisani
- RHIC/AGS Main Control (generally SL should call MCR)

Specific groups will be indicated in the response instructions for each alarm. Common sense can also be used. See “Contacts” on the Run-3 page for phone/pager numbers. (Call ‘em at home; they secretly love it.)

Emergency Conditions (2)

(location)

Main Power Breaker Trip Failure

This indicates that a power panel breaker was instructed to trip open --probably as a result of smoke or fire indicators -- but has **failed to trip correctly**. To prevent current from continuing to flow, you have to trip the corresponding breaker by hand. (Note: This is *not* the same as the “Breaker Trip” alarm, which does not require emergency action by itself.)



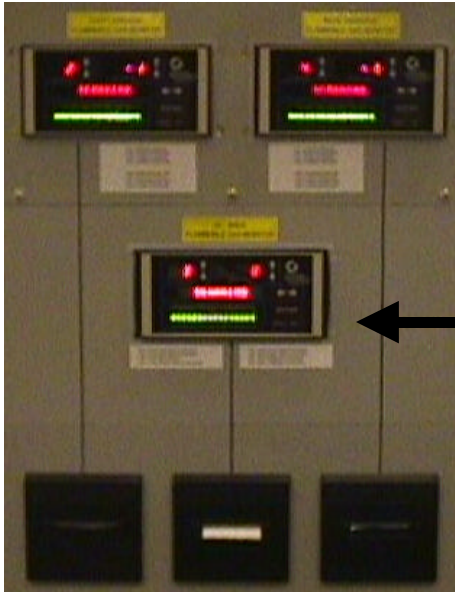
Rack Room Panel



Gas Mixing
House Panel

All the breakers are in the panel in the rack room; *except* the breaker for the Gas Mixing House which is on the north side of the Monitoring Room of the GMH.

Non-Emergency Alarms, which do *not* ring on the main panel

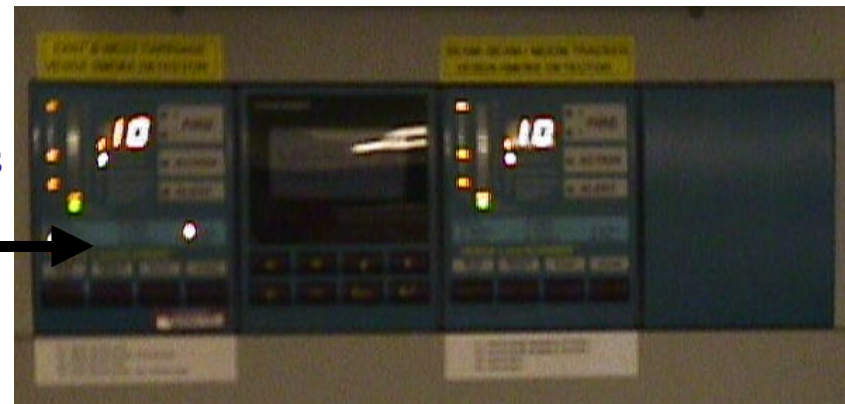


The IR Flammable Gas detectors will ring on an **internal Malfunction** condition. This is not a serious condition .

Hit ACK to quiet the tone and RESET to clear the condition. Log the alarm in the Online Logbook and inform the next shift.

If there are an excessive number of Malfunction trips, more than one or two per shift, have the Day shift call the Safety System experts. **If the Malfunction trips continually, call the Safety System experts immediately.**

The IR Smoke detectors have several **fault conditions** which are not serious and do not ring an SMCS alarm. If any **Fault** light goes on *without* the **Urgent** light, hit **Silence** to quiet the alarm. Log the alarm and have the Day Shift call the Safety System experts. **If the fault repeats, call experts immediately.**



Alarms in the Gas Mixing House

There is one alarm that rings in the PHENIX Gas Mixing House: if a gas leak has displaced the oxygen in the room then an **Oxygen Deficiency Hazard** (ODH) is detected; these **blue lights** will go on and a very loud noise will sound.

If you are in the GMH when the ODH sounds, **leave calmly** and return to the control room. The GMH ODH also rings an alarm on the main panel. **Make sure no one enters the GMH until the alarm condition is cleared by experts!**



If **flammable gas** is detected there is **no audible alarm** in the GMH, but the **power and lights** in the mixing room will go **off**. If you are in the GMH when this happens, leave calmly and return to the PCR.